

Technology and the Relationship to Quality of Life in Later Adulthood

Cheryl Fricke

Undergraduate Student, Human Development and Family Studies

Lisa Rheineck

Undergraduate Student, Human Development and Family Studies

Abstract

The use of information and communication technologies (ICT) by older adults has the potential to enhance the quality of life in those who remain connected to family and society (Feist, Parker, Howard, & Hugo, 2010). The purpose of our study was to evaluate the use of ICT by older adults to remain viable participants in society and in the lives of their families. This nonrandom pilot study, conducted at senior agencies in Northwestern Wisconsin, investigated differences between users and non-users of ICT to stay connected to significant people in their lives and to society overall. Informed by literature and Family Ecological Theory (Smith, Hamon, Ingoldsby, & Miller 2009), we predicted that older adult users of ICT would report better quality of life than non-users. Survey data were statistically analyzed using cross-tabulations, mean comparisons, and reliability analysis. Moderate support was found for the hypothesis. Implications for practitioners are to encourage users and non-users to work through possible self-imposed age barriers and increase their frequency of communication with current social networks through the use of ICT. Implications for future research would be increased sample size with greater diversity in socioeconomic status, race and geographic location. We recommend a mixed method approach using qualitative interviews for the older adult lived experience perspectives.

Key Words: information technologies, communication technologies, older adults, quality of life

By the year 2030, it is predicted that 45 percent of the adult population in the United States will be over the age of 60 (Rebola & Jones, 2011). Given this trend and increased longevity (Charness & Boot, 2009), it is worthwhile to examine the impact on the family system as vast numbers of older adults remain in their own homes as they age, or “age in place” (Bookman, 2008). For the purpose of this study, “older adult” will refer to those aged 55 and above as 55 is the base age for the facilities we surveyed. Aging in place may be preferred by older adults; however, it presents the challenge of how to prevent social isolation and loneliness which can lead to depression in those living alone (Rebola & Jones, 2011). Limited literature was found examining the benefits of the use of information and communication technologies (ICT) by older adults to remain connected to others and maintain good quality of life (Arning & Ziefle, 2008). Quality of life is multidimensional in its definition, and is defined by the Centers for Disease Control as “physical and mental health perceptions and their correlates—including health risks and conditions, functional status, social support, and socioeconomic status” (“Health Related Quality of Life”, n.d.).

As identified by the CDC (“Health Related Quality of Life”, n.d.), correlates to quality of life, such as depression in older adults, need to be addressed. Current research indicates that isolation from family and society and feelings of loneliness are significant factors leading to depression and a major indication of premature death among older adults (Rebola & Jones, 2011). Community connectedness and social networks have established links to positive well-being and health (Feist, Parker, Howard, & Hugo, 2010) and communication is paramount in remaining connected. The use of ICT by older adults can alleviate much of this isolation by connecting them to families, friends, and society via internet, computers, tablets, cell phones, and other communication mediums (Feist et al, 2010).

The current study investigated the benefit to the quality of life via the use of ICT by older adults to remain connected to family and society.

Literature Review

The researchers explored the existing literature on the relationship between older adults and their use or non-use of technology in their ability to stay connected with family and society. The search engine

Ebscohost was used. Limited literature was found to address our research question, which explains the use of studies from outside the United States. Much of the literature linked the use of these technologies to the older adult's ability to stay connected to family and the community as a whole. One study stated the older adult's lack of confidence and desire in using technology in any form created a barrier to the benefits of ICT. It was found that most computer use by older adults was for specific purposes such as word processing, and generally used in the home. The review of literature also brought to light the barrier of age itself for the lack of or infrequent use of ICT, examples being reduced vision and memory (Rebola & Jones, 2011; Wang, Rau, & Salvendy, 2011; Feist et al., 2010; Arning & Ziefle, 2008; Selwyn, 2004).

It was suggested by Rebola and Jones (2011) that aging in place could encourage good quality of life and independence in older adults. However, this can lead to feelings of loneliness and social isolation, often due to disability or loss of mobility. These are significant factors contributing to depression, decline, and early death. The focus here was to develop technical devices that promote companionship and connection through ICT. The older adults in this study were observed during engagement of various ICT, such as video conferencing, email, photo sharing, social networking, and searching for medical information on the internet. This combined with the data collected was used to develop concepts for designing products with older adults as the primary market. A universal focus of the design for these products was what would be most beneficial for older adults, such size, shape, and ease of use. The results emphasized the need for a multidisciplinary and intergenerational approach to address the needs of older adults in the design of ICT.

Wang et al. (2011) recognized the challenge of providing appropriate ICT products for older adults. This study sought to discover what factors affect the acceptance of ICT in older adults and why they accounted for only 1.9 percent of the total internet usage in 2009. We discovered that keeping up with technology had to be desired by the individual, otherwise there was not enough effort being put forward. The study found that of the older adults surveyed, the two main reasons to use the internet was staying connected with others (94%), and to read about news and events going on around the world (72%). It was noted that

there were some physical limitations for older adults, such as vision and hearing impairments. Lack of self-confidence due to forgetting how to manipulate the ICT led to the lack of interest in using updated technology.

Feist et al. (2010) examined the use of new technology in rural Australia by older adult users to stay connected to their community. Technology had become mainstreamed in society, but the use of it by older adults to remain connected was “under-utilized and under-researched” (p.69). A survey was used to gather multiple layers of information and self-rated health status. Increase in age was related to a decrease in the use of technologies though it was noted that more than half of those 80 years or older were familiar with the use of mobile phones, though not comfortable with use. The same could not be said about computer and internet use where 44% to 51% did not know how to use those technologies. However, adults 55 to 64 were more likely to stay current with technology and had positive things to say about developing new technology. In this age group over 40 % perceived new technologies useful, particularly with remaining in touch with family and friends.

Arning and Ziefle (2008) examined the need for tools to assess computer proficiency in older adults. They found validated and standardized instruments for young users yet none have been developed for the older group of ICT users. Due to the ever expanding development of ICT, they saw the need to research potential knowledge deficits in older adults which could then be addressed in computer training. To this end, they developed the Computer Expertise questionnaire designed for older ICT-users which was age-specific and a valid tool for assessing computer literacy in older adults.

Selwyn (2004) expressed the widespread notion that older adults should be using more ICT; in fact it was reputed to be a requirement for living in the “information age” (p.1). A shift has been encouraged to ICT in all areas of society such as employment, leisure, and community involvement. There is a lack of research in the area of ICT use in older adults, but empirical studies have found that use of the internet by older adults can lower the level of life stress (Selwyn, 2004). The use of ICT will allow older adults to “reconnect or improve their connection with the outside world and

enjoy a higher quality of life” (p.370). Considering that technology is evolving at such a fast rate and that people are also changing, this study clearly showed the limited amount of research that has been done.

The lack of current research regarding older adult users and non-users of ICT in their ability to stay connected with family and society fueled our desire to investigate further. The articles mentioned above indicated how ICT among this population is being used, such as word processing, photo sharing, and remaining informed about current events. There was, however, a noticeable deficit as to the outcome of ICT use on the overall benefit for its older adult users.

Theoretical Framework

Brofenbrenner’s Family Ecology Theory (Smith, Hamon, Ingoldsby, & Miller, 2009) was used to frame this study. This theory involves four basic systems of environment that influence individual development: the microsystem, mesosystem, exosystem, and macrosystem. The microsystem is our immediate environment and what directly affects us, such as family, peers, school, church, and neighborhood. For example, using the internet to visit sites of interest and email family and friends can increase one’s support and lessen feelings of loneliness. The Mesosystem is the relationship between the Microsystems such as the relationship between the neighborhood, friends, and the family. In the Mesosystem, the parts of an individual’s environment are not independent; but associate with each other and the Microsystem. Older adults who lack this affiliation and choose not to use or have little access to ICT may experience feelings of isolation and loneliness. Lessened degrees of communication, isolation, and loneliness can contribute to poor quality of life. The Exosystem has influence on the individual, but that individual has no active role in the settings, such as the government, social services agencies, and the media. The Macrosystem encompasses the attitudes, values, customs, and the laws of the culture of the environment an individual lives. As applied to this study, Family Ecology theory (Smith et al., 2009) would predict that the use of ICT by older adults to stay connected to family and others alleviates feelings of isolation

and loneliness, thus maintaining good quality of life. Through the use of technology such as Skype, the family can observe the current condition of their older adult instead of relying on a verbal indication of health. This benefits the entire family as it decreases the level of stress normally reserved for worry over the condition of distant parents and grandparents. In addition, the older adult gets to see as well as speak to a distant family member. Accompanying our society's quickly changing technology is a digital divide between the technologically advanced youth of today and the older generation (Epstein, Nisbet, & Gillespie, 2011). In order to bridge this gap, those involved in the lives of older adults must provide encouragement and education so this older generation may recognize the benefits of ICT to themselves and the society that serves them.

Purpose Statement

The purpose of this study was threefold: (1) to identify the benefits of ICT use on the quality of life in older adults by comparing users and non-users; (2) to develop a reliable survey instrument to measure these differences; (3) to raise the awareness of those who work with older adults on the benefits of ICT use for quality of life in older adults.

The question central to this study was "what are the differences between older adult users and non-users of ICT in their ability to stay connected with family and society?". We predicted that older adult users of ICT have better quality of life than non-users. We based this hypothesis on evidence found in current literature that advocates the need for continued communication practices in older adults. Research indicated that isolation from family and society are significant factors leading to depression and a decline in quality of life (Rebola & Jones, 2011). Furthermore, Family Ecological Theory (Smith et al., 2009), states that older adults' quality of life depends on the shared values and attitudes of family and society. ICT incorporates the various technologies that might reinforce this connection. Rapid advances in technological development recommend that older adults begin the use of ICT to stay current. If they do not, the digital divide will continue to widen leaving this older generation without the benefits that could be gained through the use of ICT.

Method

Participants

This pilot study was conducted at two locations: a senior center and an assisted living facility in northwestern Wisconsin. Participants were 55 years and older, both users and non-users of ICT. Of the 59 older adults who participated, 44 were women with 37 of those being users and 7 being non-users. There were 15 males with 12 being users and 3 being non-users.

Table 1

Demographics

Age	55-59	60-64	65-69	70-74	75-79	80 +
Women (N=44)						
User	3	9	10	8	6	1
Non-user	0	0	0	4	2	1
Men (N=15)						
User	1	5	3	1	1	1
Non-user	0	0	0	1	0	2

Research Design

We conducted cross-sectional survey research at one point in time as our research method. Our design and sampling method was non-random purposive as our purpose was to survey older adults in senior centers and assisted living facilities in northwestern Wisconsin; we chose not to use random sampling in order to help us get a variety of participants. We opted to use self-administered questionnaires to reach the greatest number of participants for the lowest cost. This research method was the best fit for the short time frame we had to work within. Our study was approved by the Institutional Review Board (IRB). The ethical protection of human subjects was provided through the completion of the IRB's Human Subjects training.

Data Collection Instrument

The statements on the survey were created with the older adult in mind, addressing the need for clarity with the use of common language. On the survey, the purpose of the study was explained

as well as terms that may not be familiar to the general public. The risks and benefits, time commitment, voluntary participation, confidentiality, our contact information and our advisors information, as well as instructions for completing the survey were explained.

The survey consisted of two demographic questions: age and gender. We included a question that pertained to ICT use to be answered yes or no. If the participant answered yes, they were to list what ICT was used. The remaining eleven statements were closed-ended based on the 5-point Likert scale, which was used to measure the intensity of the participants' attitudes ranging from one (strongly disagree) to five (strongly agree). Statements were informed by the literature and theory. Participants were asked to add any additional comments below the final survey question.

The survey instrument had both face validity (instrument statements having a logical connection to the concept and research question), and content validity (instrument statements' coverage of the full range of concepts under the larger topic). The statements communicated a broad range of attitudes and perceptions about ICT use. The survey was piloted to four older adults to increase validity and feedback was given that assured the survey was clear and ready for disbursement.

Procedure

We contacted the directors of two facilities for older adults via e-mail and phone and secured their cooperation in sampling their clients. Surveys were placed in two high-traffic areas at one facility and in personal mail boxes in the other facility beginning March 13th, 2012 and retrieved on March 21st, 2012. Attached to each survey were the implied consent, contact information for us and the supervising professor in the event they had questions regarding their participation. Completed surveys were placed in a secured box at one location, and in individual mail boxes at the other location until retrieved for data analysis.

Data Analysis Plan

Surveys were cleaned and checked for missing data, then coded and labeled with a three letter acronym for each variable. We had two demographic questions regarding age (*AGE*) and gender (*GEN*). The

survey included one independent variable that pertained to ICT use. The dependent variables were: *I believe that I am too old to use ICT* (TOL); *I feel isolated from other people without using ICT* (FIP); *I use or would use ICT to stay in touch with family* (TWF); *I use or would use ICT to stay in touch with friends* (STF); *I use or would use ICT to stay connect with society, world, and community news* (SWC); *I would use ICT or use more frequently if I had more financial resources to purchase devices* (MFR); *I would use ICT or use more frequently if they were easier to use* (ETU); *I would use ICT if I had access to instructional classes* (AIC); *I would use ICT or use more frequently if I had transportation to a location that had computers to use* (TTC); *I use ICT or would use for entertainment purposes* (UEP); and, *I use ICT or would use for shopping purposes* (FSP).

The computer program, *Statistical Package for the Social Sciences* (SPSS), was used to analyze the compiled data. The individual was used as level of analysis. Whereas we compared groups based on use of ICT, the analyses included: cross-tabulations, mean-comparisons, and a reliability analysis-Cronbach's Alpha. The variables used to indicate quality of life, informed by the literature included: FIP, TWF, STF, and SWC.

Results

The data collected was analyzed using SPSS. The summary of analyses in this section include: cross-tabulations, mean comparisons, and Chronbach's Alpha reliability analysis. Independent t-tests were not run due to disparity of sample size in the non-users. We are using the mean comparison results to test the hypothesis.

We found mixed support for the hypothesis within the mean comparisons. Although we found that users felt more strongly that they would use ICT to stay in touch with family and friends (TWF and SWF), there was little difference found between users and non-users when it came to isolation (FIP *I feel isolated from other people without using ICT*). The non-users more strongly agreed that they would stay connected to the world at large, (SWC *I use or would use ICT to stay connected with society; world and community news*). These results demonstrate that within this sample group, the older adults appeared to not have an issue with isolation; however, they would use ICT to stay connected with others.

Table 2

<i>Compare Means</i>												
YNO	TOL	FIP	TWF	STF	SWC	MFR	ETU	AIC	TTC	UEP	FSP	
User												
Mean	1.53	2.45	3.53	3.61	3.47	2.51	2.90	2.51	2.02	3.94	3.10	
SD	1.04	1.31	1.57	1.62	1.57	1.34	1.37	1.28	1.21	1.28	1.62	
Range	4.00	4.00	1.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
Non-user												
Mean	2.60	2.40	2.80	2.60	4.50	2.60	4.00	2.90	2.40	2.10	2.60	
SD	1.78	1.35	1.23	0.97	5.91	1.71	0.94	0.74	1.35	0.88	1.71	
Range	4.00	3.00	4.00	4.00	4.00	4.00	3.00	2.00	4.00	2.00	4.00	

Note. (TOL) = I believe that I am too old to use ICT; (FIP) = I feel isolated from other people without using ICT; (TWF) = I use or would use ICT to stay in touch with family; (STF) = I use or would use ICT to stay in touch with friends; (SWC) = I use or would use ICT to stay connect with society; world and community news; (MFR) = I would use ICT or use more frequently if I had more financial resources to purchase devices; (ETU) = I would use ICT or use more frequently if they were easier to use; (AIC) = I would use ICT if I had access to instructional classes; (TTC) = I would use ICT or use more frequently if I had transportation to a location that had computers to use; (UEP) = I use ICT or would use for entertainment purposes; (FSP) = I use ICT or would use for shopping purposes.

A reliability analysis was run to indicate if our 11 variables were a reliable index to measure the major concept: technology and relationship to quality of life in later adulthood. Cronbach's Alpha is a measure of reliability and was 0.524. This value indicated that survey items were a moderately reliable measure of the major concept. This is most likely due to the disparity in group size with non-users being significantly smaller than users.

Discussion

The increased numbers of older adults combined with greater longevity (Charness & Boot, 2009) elevate the number of potentially isolated individuals. The use of various ICT formats such as tablets, cell phones, and computers by older adults to remain connected to others may decrease feelings of loneliness. The quickly growing digital divide is exacerbated by the lack of ICT use by older adults. We found mixed support in our mean comparisons for the hypothesis that older adult users of ICT would have better quality of life than older adult non-users. However, one participant provided us with a quote that shows the potential impact of ICT for enhancing connections with others.

This older adult stated that “*ICT has been invaluable to me. My kids are in Portland and Idaho and we contact each other or use Face Book frequently – as I also keep up with friends and family across the country.*” What follows are themes that we used to organize our variables.

Connected

Strongest support for the hypothesis came from the variables TWF (*I use or would use ICT to stay in touch with family*) and STF (*I use or would use ICT to stay in touch with friends*), with the majority of users and non-users having agreed or strongly agreed. Responses to the variable SWC (*I use or would use ICT to stay connected with society, world and community news*) did not support the hypothesis as the nonusers responded more strongly than the users. We speculate this may be due to their overall awareness of current events via TV, reading newspapers, and listening to the radio to stay connected. According to Family Ecological theory (Smith et al., 2009), to remain connected with society, world and community news would fall in the exosystem and would impact the individual but not as directly as the microsystem.

Leisure

For the variables UEP (*I would use ICT or use more frequently entertainment*) and FSP (*I would use ICT or use more frequently for shopping*) the results were similar between users and non-users. ICT has encouraged a shift in all areas of society such as employment, leisure, and community involvement. According to Family Ecological theory (Smith et al., 2009), this would fit within the exosystem, not involving the individual directly, but nonetheless will influence his/her development.

Use of ICT

The study by Rebola and Jones (2011) on using ICT for inclusion in the population of older adults focused on the development of technical devices that promote companionship and connection. The primary focus in device design was what would be most beneficial for older adults, such as size, shape, and ease of use. The dependent variables ETU (*I would use ICT or use more frequently if they were easier to use*) and AIC (*I would use ICT if I had access to instructional classes*) highlight the attitudes

and beliefs that to remain a viable member of our society you must be “connected”. Our society uses ICT on a daily basis in all areas of life and to do without might leave an individual on the other side of the digital divide.

Resources

With the variable MRF (*I would use ICT or use more frequently if I had more financial resources*), the majority of users and non-users disagreed and/or strongly disagreed that if they had more money they would use ICT more. We suggest that this may be due to the older adults having matured at a time when many had to do without and as a result are less apt to spend on non-essentials.

For variable TTC (*I would use ICT or use more frequently if I had transportation to a location that had computers to use*), the majority of users and non-users disagreed and/or strongly disagreed that transportation would make a difference in their use of ICT. This could be explained by our small sample and the lack of geographic diversity.

Limitations

Limitations to this study were the small sample size and limited geographic diversity among the participants. This may have contributed to the disproportionately small number of non-user participants, which left us unable to run an independent T-test. In addition, the use of the traditional 5-point Likert scale offers limited responses with which participants may not fully agree. It is possible that increasing to a 6 or 7-point scale with more response possibilities, would create more accurate results.

In addition, it is possible that if we were to include questions regarding quality of life and feelings of isolation on the survey, we would receive more revealing results.

Implications for Practitioners

When shared with practitioners such as primary physicians, gerontologists and those in the mental health field, the results from this pilot study have the potential to improve quality of life in older adults. Others serving older adults could use the results to gain better insight into the needs of the older adult such as feelings of isolation and loneliness and how these might be better managed with their use of ICT.

Both users and non-users who felt restricted by age would find enhanced quality of life when encouraged by directors to engage in a creative and positive learning environment to use ICT. We suggest that to enable older adults to work through the self-imposed age barrier, lessons could be taught one-on-one or in small groups, and possibly peer-facilitated.

Implications for Future Research

Should the survey be repeated, asking questions about the relationship between individual living arrangements (living alone or with others in private residence; living alone or with others in a rural private residence; living alone or with a partner in an assisted living facility) and the use of ICT to combat isolation would give us a greater understanding of how living arrangements in older adults combined with the use or non-use of ICT impacts quality of life. We also recommend including questions generated through the use of the Geriatric Depression Scale to gain greater depth and understanding of loneliness and isolation of older adults (Yesavage, Jerome, 1986).

Future samples should be larger in size, random to generalize results, and include more diversity in terms of demographic variables such as gender, race, education, and income level. A larger sample would allow for significance testing.

Adding qualitative interviews would assist in discovering the true lived experience of ICT use, to be able to clarify questions and responses.

Conclusion

Older adults in the United States are often left behind as we strive to be greater and faster. Our desire for instant gratification fuels our need for the latest and greatest technology and has created a digital divide in the use of ICT. Given the limitations in this exploratory nonrandom pilot study, we have taken a small step towards understanding ICT use and the older adult. The benefits and enjoyment gained through the use of ICT could conceivably improve the quality of life of lonely and isolated individuals in late adulthood. The introduction and promotion of ICT to non-users as well as the continued encouragement to current users would enhance the living experience of aging in place. If we familiarize individuals in late adulthood with current technology, it would allow the

older adult users of today and those in the future to remain connected. Not only would this provide greater quality of life, it would enable them to continue to have a vital and informed role in our society.

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